# TECHNICAL SPECIFICATIONS

# WASHINGTON STATE FERRIES

# M.V. WALLA WALLA DRYDOCKING

# CONTRACT NO. 00-6643

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# TECHNICAL SPECIFICATIONS

**For the following Technical Specifications, the Contractor is to provide all labor, material and equipment to accomplish each and every Bid Item unless otherwise specified.**

**The Specification Item sub-titles in brackets are for WSF internal use only, for Life Cycle Cost modeling. Bidders should ignore such bracketed sub-titles.**

## 1. DRYDOCK VESSEL
{MAINTENANCE}

**M.V. Walla Walla Vessel Particulars:**
**Length**: 440' 0", **Beam**: 87' 0", **Draft**: 18' 0", **Gross Tons**: 3,246

A. Drydock Vessel for cleaning, painting, inspections, and the work specified herein and any necessary repairs.

B. Block spacing shall be at 12-foot centers. **Attachment No. 2** "Block Position Form" is provided to show previous blocking position used. Within twenty-four (24) hours of Drydocking the Vessel, provide three (3) copies of the Blocking drawing to the WSF Inspector indicating the block positions used.

## 2. TEMPORARY SERVICE
{STRUCTURAL PRESERVATION}

A. Install one (1) telephone on board in a location designated by the Vessel Staff Chief Engineer. The telephone is to have one (1) outside line with toll-free access to Seattle and vicinity and, if different, one (1) line for local numbers. The telephone shall have touch-tone service if available from the Contractor's telephone system.

B. Provide and/or maintain electricity, potable water, sewage removal, safe lighted gangway, and trash removal services while Vessel is in the Contractor's facility.

C. Provide safety and security for the entire Vessel throughout this contract period until such time as the WSF Representative has accepted re-delivery of the Vessel. Every reasonable precaution shall be taken to protect the Vessel from the hazards of fire, flooding, pilferage, malicious damage, and other events including cataclysmic phenomena of nature.

D. Provide and maintain comprehensive and effective fire prevention and fire detection, and fire fighting programs and systems sufficient to ensure the safety and integrity of the Vessel. Provide personnel trained in shipboard fire fighting techniques and also trained to cooperate with and assist local fire fighting organizations. Provide sufficient shore fire hoses to ensure an adequate supply of fire fighting water, at sufficient pressure, and maintain an adequate number of tested fire-hoses aboard the Vessel to effectively fight fires at any location in the Vessel.

E. Provide and maintain portable fire extinguishers in sufficient quantity, and of the appropriate type, to combat local fires of any class. Provide sufficient fire watches, including roving watches as may be required, to ensure that fires that may be inadvertently started by welding sparks or heat, electrical malfunction, or spontaneous combustion are detected, reported and promptly extinguished.

## 3. RUDDER INSPECTION NO. 1 AND NO. 2 ENDS
**{MAINTENANCE}**

A. Erect staging or provide suitable personnel lifting device on both sides of No. 1 and No. 2 End rudders for inspection.

B. Drain and pressure test rudders for leaks in the presence of the WSF Inspector, and Vessel Staff Chief Engineer, and USCG Inspector. Test pressure shall be 42" of water or 1.5-PSI gage pressure held for a period of one (1) hour, with zero pressure drop allowed.

C. Take and record rudder bearings clearances (carrier, neck, and gudgeon) on No. 1 and No. 2 End rudders. Within twenty-four (24) hours of event completion, submit three (3) copies of a written report of the findings to the WSF Inspector.

D. Remove the existing packing, clean up packing area, packing gland, studs, nuts, and replace the packing with new Contractor furnished Teflon Impregnated Flax packing, of the proper size and number of rings, on the No.1 and No.2 End rudders. Use **Attachment No. 3** WSF Dwg. No. 8100-6605-519-2, Rev. A, dated 08/27/71, titled "Rudder Stock, Pintle, Carrier and Bearing" for guidance.

E. Provide the Vessel Staff Chief Engineer with one (1) spare packing ring for each end.

F. Upon completion of all work in this Item, and prior to Undocking the Vessel, in the presence of the WSF Inspector, the USCG Inspector, and the Vessel Staff Chief Engineer, perform an operational test of the rudders to prove proper operation.

## 4. PROPELLER INSPECTION, NO. 1 AND NO. 2 ENDS
**{MAINTENANCE}**

A. Erect and modify staging as required, in area around No. 1 and No. 2 End Propellers to accomplish all affiliated work and required inspections in this Item, ROPE GUARD AND ZINC REPLACEMENT Item, PROPELLER REMOVAL Item, and OUTER WAUKESHA SEAL REPLACEMENT Item. Remove staging upon completion of all affiliated work and inspections.

B. Polish the No. 1 and No. 2 End Propellers by power disk sanding using 80 grit or finer abrasive. Thoroughly clean propeller blades and hubs for nondestructive testing.

C. Perform an NDT inspection of the No. 1 and No. 2 End propeller blades and hubs. Any repairs to propellers will be the subject of a change order.

D. Within twenty-four (24) hours of the completion of the event submit three (3) copies of a written report of the findings to the WSF Inspector.

## 5. PROPELLER REMOVAL, NO. 1 AND NO. 2 ENDS
**{MAINTENANCE}**

A. Remove No. 1 and No. 2 End Propellers and transport to and from ROLLS-ROYCE, 4451 14$^{th}$ Ave N.W., Seattle Washington, 98107-4696, Phone No. (206) 782-9190, for inspection and repair (to include NDT, pitch, dynamically balance, etc.). Measure and record "draw up" position of propeller, prior to removal for reference at reinstallation. Repairs to propellers will be the subjects of a change order. Staging is included on Propeller Inspection Item.

B. Clean the Propeller Bores and Keyways, Propeller Shaft tapers, Shaft key ways, and Keys. Perform an NDT, MAG. PARTICAL, inspection of these items for cracks.

C. Reinstall propellers on shafts. Nut hardening to be witnessed by the WSF Inspector, USCG Inspector, and the Vessel Staff Chief Engineer.

D. Provide the WSF Inspector with three (3) copies of the written reports for each propeller, including reports of any non-destructive testing, condition, repair (if any) and testing of each propeller, this includes all inspections, test and repairs by Contractor or Repair facility. Reports will be provided within twenty-four (24) hours of completion of the event.

## 6. ROPE GUARD AND ZINC REPLACEMENTS, NO. 1 AND NO. 2 ENDS

**{MAINTENANCE}**

A. Remove the existing rope guards and zincs from the No. 1 and No. 2 ends and replace them with new contractor furnished rope guards and zincs (one (1) six inch by twelve inch zinc cut in half for each rope guard half), welded to the inside of the rope guards. Staging is included in the Propeller inspection item.

B. Prepare and paint the rope guards using the below the water line painting system.

## 7. VOID TANKS INSPECTION

**{MAINTENANCE}**

**NOTE:**

On M.V. Walla Walla there are six (6) Void spaces. The Vessel Crew will open and close the covers. The Contractor will provide the Vessel Crew with new Cotton Grommets.

A. Provide the services of a Marine Chemist to certify Voids "SAFE FOR WORKERS". Provide lighting and ventilation as necessary to facilitate the USCG inspection and any other work to be performed in the Voids.

## PAINTING OF VESSEL AND HULL PRESERVATION

## Special Note

## (ATTACHMENT NO. 1)

**Area Preparation, Surface Preparation, Grit Blasting, Paint Coatings, and Inspection for Vessel's hull, curtain plates, casing and super structure shall be in accordance with Washington State Ferries Marine Coating Specification 1/03 unless otherwise specified in the following specifications.**

## 8. FRESH WATER WASH OF VESSEL HULL FREEBOARD
**{STRUCTURAL PRESERVATION - HULL}**

A. Within twenty-four (24) hours of Dry Docking Vessel, perform Low-Pressure Water Cleaning (LP WC) at 3,000-3,500 PSI in accordance with SSPC-SP 12/NACE 5. The wand shall be held no more than twelve inches (12") from surface being washed. The hull from the guard to the waterline, including all horizontal and vertical surfaces of the guard. The wash shall leave no visible growth or residue after the hull dries from washing.

## 9. FRESH WATER WASH OF VESSEL HULL, BELOW WATERLINE
**{STRUCTURAL PRESERVATION-HULL}**

A. Within twenty-four (24) hours of Drydocking Vessel, perform a fire hose wash of hull with freshwater. Water pressure shall be a minimum of 100 psi. The Hull, from the waterline to the keel, including flat keel, sea chests, strainer plates, propellers and rudders, shall be washed. The wash shall leave no visible growth or residue after the hull dries from washing.

B. Sea chest strainer plates shall be removed for cleaning, preparation and painting and reinstalled upon completion of all related work and inspection.

## 10. PREPARATION OF VESSEL HULL FOR GRIT BLASTING
**{STRUCTURAL PRESERVATION - HULL}**

**NOTE:**

Care shall be taken to avoid damage to the "CAPAC" anodes and reference cell.

A. Install protective covering on propellers, shaft seals, propeller bearings, exposed shafting, upper and lower rudder bearing areas, pintle pin bushing, CAPAC anodes and reference cell, all through-hull penetrations, sea valves, and entrance ways to protect and prevent grit blast material from causing damage or entering Vessel. Prior to any grit blasting the Contractor shall conduct a cover up inspection with the WSF Inspector and the Vessel Staff Chief Engineer.

B. Upon completion of hull grit blasting and removal of cover up material, conduct an inspection in the presence of the WSF Inspector and the Vessel Staff Engineer.

## 11. GRIT BLAST GUARD

**{STRUCTURAL PRESERVATION - HULL}**

**NOTE:**

For purposes of bidding assume that **1,800 Square Feet** of the Guard will require grit blasting to SSPC-SP6, Commercial Blast Cleaning. Upon completion of the grit blast, the Contract will be adjusted upward or downward to account for the actual scope of grit blasting authorized by the WSF Inspector.

A. Grit blast areas of abrasion and corrosion on the horizontal and vertical surfaces (top, bottom, and side) of the guard, as directed by the WSF Inspector, to an SSPC-SP6, Commercial Blast Cleaning.

## 12. GRIT BLAST HULL, ABOVE WATERLINE

**{STRUCTURAL PRESERVATION - HULL}**

**NOTE:**

For purpose of bidding assume that **1,000 Square Feet** of hull above the water line will require grit blasting to SSPC-SP6, Commercial Blast Cleaning. Upon completion of the grit blasting, the Contract will be adjusted upward or downward to account for the actual scope of grit blasting authorized by the WSF Inspector.

A. Grit blast areas of abrasion, corrosion or steel repairs, as directed by the WSF Inspector, to an SSPC-SP6, Commercial Blast Cleaning.

B. The coating, for at least two inches (2") bordering the blasted area, shall be feathered to a smooth surface.

## 13. GRIT BLAST HULL, BELOW WATERLINE

**{STRUCTURAL PRESERVATION - HULL}**

**NOTE:**

The intent of this specification is to completely remove the existing below water line hull coating system, and apply a new coating system using Hempel Paint. Provide the services of the Hempel Paint Representative during the preparation for, and the application of the new coating system. The Hempel Paint Representative is Mr. Ken Salesky, P.O. Box 39756 Lakewood, WA. 98439-0756, Phone No. (253) 584-9394.

A. Grit blast the complete hull from the water line to the keel, including flat keel, sea chests and piping up to the sea valve, strainer plates, rudders, and all other below water line painted surfaces, except Keel Block Locations, to SSPC-SP6, Commercial Blast Cleaning.

## 14. PAINTING OF VESSEL GUARD, SPOT COAT
**{STRUCTURAL PRESERVATION - HULL}**

A. Apply one (1) coat of HEMPEL HEMPADUR 17630 Black shade No. 19990, to all surfaces of the guard that were grit blasted in the GRIT BLAST GUARD Item, to a minimum of 6 mils (DFT).

## 15. PAINTING OF VESSEL GUARD, FULL COAT
**{STRUCTURAL PRESERVATION - HULL}**

A. Apply one (1) coat of HEMPEL HEMPADUR 17630 Black shade No. 19990, to all horizontal and vertical surfaces (top, bottom, and side) of the entire guard to a minimum of 6 mils (DFT).

## 16. PAINTING OF VESSEL HULL, ABOVE WATERLINE
**{STRUCTURAL PRESERVATION - HULL}**

**NOTE:**

For bidding purposes assume that **1,000 Square Feet** of the hull will require the ANTI-CORROSION COATING and TOPCOATING, the topcoat shall be applied in a manner that is pleasing to the eye. The Contract will be adjusted upward or downward using the square footage determined in the Grit Blast Hull Above Water Line Item.

A. Apply two (2) coats of HEMPEL HEMPADUR 17630 to a minimum of 6 mils (DFT) each coat, first coat will be Cream shade No. 20320, second coat will be Gray shade No. 12170, for a minimum total of 12 mils (DFT).

B. Apply one (1) coat of HEMPEL'S EPOXY 558US Green shade No. A4091 to a minimum of 3 mils (DFT).

## 17. PAINTING OF VESSEL HULL, BELOW WATERLINE
**{STRUCTURAL PRESERVATION - HULL}**

A. Apply two (2) coats of HEMPEL HEMPADUR 17630 to all surfaces grit blasted in the GRIT BLAST HULL BELOW WATER LINE Item, to a minimum of 6 mils (DFT) each coat, first coat will be Cream shade No. 20320, second coat will be Gray shade No. 12170, for a minimum total of 12 mils (DFT).

B. Apply two (2) coats of HEMPEL'S A/F OLYMPIC 76600, first coat will be Red shade No. 51110, to a minimum of 3 mils (DFT), the second coat will be Black shade No. 19990 to a minimum of 4 mils (DFT), for a minimum total of 7 mils (DFT).

## 18. DRAFT AND HULL MARKINGS
**{STRUCTURAL PRESERVATION - HULL}**

A. Paint all draft and hull marks using HEMPEL HEMPALIN ENAMEL 5214A White shade No. 10000, to a minimum of 2 mils (DFT).

## 19. FRESH WATER WASH, ENTIRE TOPSIDE OF VESSEL
**{STRUCTURAL PRESERVATION - TOPSIDE}**

**NOTE:**

The contractor is advised to exercise care and caution to assure that all insulation, light fixtures, speakers, cabling, alarms, signage, and appurtenances are protected and not damaged by the fresh water wash down.

A. Low Pressure Fresh Water Clean (LP WC) the entire exterior of the Vessel from the Vehicle Deck to the Top of the mast, at 3,000-5,000 PSI to achieve a condition of SC-1 IAW Table 2 (Non-visual Surface Preparation Definitions) in SSPC-SP 12/NACE 5. The wand will be held no more than twelve (12) inches from surface being washed. Use ZEP FORMULA 50 or equal when washing, **DO NOT** use AMERON, Prep 88 or International GMA, since the intent is to do a spot coat preservation, and WSF does not wish to etch, dull or damage paint in areas which will not be over coated. The area to be washed is the entire exterior surface and exterior components of the Vessel. These areas include: Shelter deck areas; Vehicle deck areas; exterior Curtain Plate and Passenger Cabin House Sides, Stairwells; all Appurtenances; Masts, Stacks including Stack Tops; Pilot house and Pilot House Tops; Crew Quarters and Crew Quarters House Tops; all External Surfaces of the Passenger Decks, Vehicle Decks including the Exterior Overheads, Bulkheads, Pockets which are open to the weather in the Casings, Decks, Stairwells and Shelter Areas; Rescue Boat Stations, Anchor handling areas, all Deck Screens and stanchions, and Deck Coamings. It is the intent of this item to wash the entire exterior surface of the Vessel.

B. Clean all exterior windows upon completion of Water Wash. Glass to be cleaned to remove all dirt, paint, water streaks and other foreign matter. Care will be taken to prevent scratching of the window surfaces.

## 20. PREPARATION AND PAINTING TOPSIDE
**{STRUCTURAL PRESERVATION - TOPSIDE}**

**NOTE:**

For bidding purposes, assume that **5,000 Square Feet** will require SSPC-SP3, Power Tool Cleaning, and painting as described herein. Upon completion of the preparation and painting, the Contract will be adjusted upward or downward to account for the actual area authorized by the WSF Inspector.

A. Prepare various areas, as directed by the WSF Inspector, to an SSPC-SP3, Power Tool Cleaning.

B. Apply two (2) coats of INTERNATIONAL Intertuf 262, to a minimum of 6 mils (DFT) each coat for a total of 12 mils (DFT), to the prepared surfaces. The back sides, corners and sharp edges of all angles, rat holes, weld seams, scallops and beams shall be hand-striped with a brush using Intertuf 262.

C. Apply a topcoat of INTERNATIONAL Intercare 755, to a minimum of 2 mils (DFT) of proper color.

## 21. CURTAIN PLATE PRESEVATION, SPOT COAT

**{STRUCTURAL PRESERVATION -TOP SIDE}**

**NOTE:**

For bidding purposes assume that **1,000 Square Feet** of the outboard curtain plates, PORT and STBD, will require an SSPC-SP3, Power Tool Cleaning. Upon completion of the preparation, the Contract will be adjusted upward or downward to account for the actual scope of work authorized by the WSF Inspector.

A. Prepare areas of the curtain plate to an SSPC-SP3, Power Tool Cleaning, as directed by the WSF Inspector.

B. Apply two (2) coats of INTERNATIONAL Intertuf 262, to a minimum of 6 mils (DFT), each coat, for a minimum total of 12 mils (DFT) to areas prepared in this item.

C. Apply a topcoat of INTERNATIONAL Intercare 755, of the proper color to a minimum of 2 mils (DFT), to areas prepared in this item.

## 22. CURTAIN PLATE PRESERVATION, GREEN STRIPE, FULL COAT

**{STRUCTURAL PRESERVATION TOP SIDE}**

A. Apply a full topcoat of INTERNATIONAL Intercare 755, WSF GREEN to a minimum of 2 mils (DFT), to the entire green stripe on the outboard curtain plates.

## 23. PREPARATION AND PAINTING, UPPER AND LOWER, VEHICLE DECKS, NON-SKID

**{STRUCTURAL PRESERVATION - TOPSIDE}**

**NOTE:**

For bidding purposes assume that **3,000 Square Feet** of non-skid will require preparation and painting. The main area of concern is the outboard vehicle lane, next to the curbing, on both the upper and lower vehicle decks. Upon completion of the preparation and painting, the Contract will be adjusted upward or downward to account for the actual area authorized by the WSF Inspector. Provide the services of the American Safety Paint Representative during the preparation for, and the application of the new non-skid coating. The American Safety Paint Representative is Mr. Ray Meador, 2940 6th Ave. South Seattle, WA. 98134. Phone No. (206) 391-1293.

A. The Contractor and the WSF Inspector will conduct a survey of the Vehicle Deck non-skid areas to determine the areas that will be repaired. The Contract will be adjusted upward or downward to account for the actual area authorized by the WSF Inspector.

B. Prepare and paint the selected areas. Prepare the areas to an SSPC-SP10, Near-White Blast Cleaning with a 3-4 mil profile. Contractor will use TRACK BLAST method to prepare surface. The area next to the curbing that cannot be track blasted will be prepared to an SSPC-SP11, Power Tool Cleaning to Bare Metal.

C. Apply one (1) coat of AMERICAN SAFETY, MS-7CZ Surface Primer Gray, to a minimum of 4 mils (DFT), to all areas prepared in this Item.

D. Apply AMERICAN SAFETY AS-250 "Heavy Duty Vehicular Grade Epoxy Anti-Slip Coating" Dark Gray, at 40 Square Feet per gallon, as per manufactures recommendation, to areas prepared in this item.

E. Apply Black and/or Signal Yellow striping, as required, INTERNATIONAL Intercare 755 to a minimum of 2 mils (DFT), to all required areas.

## 24. DECK DRAINS

**{STRUCTURAL PRESERVATION - TOPSIDE}**

A. Clean out and Flush all deck drains, and upon completion of all topside work, prove operation to the WSF Inspector and Vessel Staff Chief Engineer.

## 25. SEA CHEST INSPECTION, PRESERVATION, AND ANODE REPLACEMENT

**{MAINTENANCE}**

A. Open the four (4) anode covers located on top of the sea chests for inspection by the WSF Inspector and the Vessel Staff Chief Engineer. (The covers weigh approximately 150 lbs. each, and requires that two (2) electrical leads, from each anode, be disconnected prior to anode removal and reconnected upon installation of the new anodes). Protect deck from damage during this work item.

B. Prior to installing the anodes, prepare the exterior surface of the sea chest access plates and anode mounting flanges to an SSPC-SP3, Power Tool Cleaning. Apply one (1) coat of HEMPEL HEMPADUR 17630 Cream shade No. 20320 to a minimum of 6 mils (DFT) to the anode-mounting flange. The final coat on the sea chests exterior covers shall match surrounding bilge color.

C. Remove existing anodes and install new WSF supplied anodes. Turn the existing anodes over to the Vessel Staff Chief Engineer. Close up the sea chest access plates using new Contractor furnished fasteners, gaskets.

## 26. SEA STRAINER BOX INSPECTION AND PRESERVATION

**{MAINTENANCE}**

**NOTE:**

For purposes of bidding assume that **20 Square Feet** per strainer box, for a total of **40 Square Feet,** will require to an SSPC-SP3, Power Tool Cleaning. Upon completion of the preparation, the Contract will be adjusted upward or downward to account for the actual scope of work authorized by the WSF Inspector.

A. Open the Port and Starboard sea strainer boxes for inspection of guide rails, screens and other internal fittings, the inspection to be witnessed by the WSF Inspector and the Vessel Staff Engineer. Submit three (3) copies of the written report on the condition of the strainer boxes, guide rails, screens, strainer plates and other internal fittings to the WSF Inspector.

B. Mechanically clean the interiors, including any piping, access covers and any exterior areas of the strainer boxes damaged during work, to SSPC-SP 3, Power Tool Cleaning. **During preparation and painting, protect the valve seats and discs from damage and paint.**

C. To the prepared areas apply two (2) coats HEMPEL HEMPADUR 17630 to a minimum of 6 mils (DFT) each coat, first coat will be Cream shade No. 20320, second coat will be Gray shade No. 12170, for a minimum total of 12 mils (DFT).

D. Apply one (1) coat of HEMPEL'S A/F OLYMPIC 76600, Red shade No. 51110, to a minimum of 3 mils (DFT), to all prepared areas.

E. Apply one (1) full coat of HEMPEL'S A/F OLYMPIC 76600, Black shade No. 19990, to a minimum of 4 mils (DFT)

F. Final coat on prepared areas of the strainer box exterior shall match surrounding gray epoxy bilge color, at a minimum of 6 mils (DFT).

G. Close up access plates using new Contractor furnished gaskets and fasteners.

## 27. ANODE AREA CAPASTIC REPLACEMENT

**{STRUCTURAL PRESERVATION - HULL}**

**NOTE:**

All of the Capastic around all four (4) CAPAC ANODES will be removed and replaced in its entirety. Protect the Anodes from damage during the removal of the existing Capastic.

A. Remove the existing Capastic, and grit blast the areas of the Capastic to an SSPC-SP6, Commercial Blast Cleaning

B. Apply the capastic around the CAPAC anodes using "Capastic" epoxy troweling compound made by ELECTROCATALYTIC, INC. IAW **Attachment No. 4,** titled, Jumbo Class, "Capac System Dielectric Shield for 4 FT. Anode".

C. Build up a minimum of 22 mils (DFT) of epoxy Anti-Corrosion coating over the capastic areas and the secondary dielectric shield areas.

## 28. OUTER WAUKESHA SEAL REPLACEMENT, WITH EAGLE SEALS, NO. 1 AND NO. 2 ENDS

**{MAINTENANCE}**

**NOTE:**

The EAGLE SEALS are direct replacement seals for the WAUKESHA SEALS. Provide the services of an authorized Eagle Seal service representative during the installation of the new Seals and Liners. The Eagle Seal representative is, Sound Propeller 1608 Fairview Ave. E., Seattle WA. 98102. Phone No. (206)-325-5722. Staging is included on Propeller inspection item.

A. Drain all oil from the outer Waukesha oil seal system, including stern tube cavity. Dispose of oil (approximately 470 gallons each end). Clean head tank and bilge sump tank. Flush the piping from the head tank to the bilge sump tank by using ten (10 gallons each end) of clean system oil poured down the piping from the head tank to the bilge sump tank. Clean flushing oil from the bilge sump tank. Close up the head tank and sump tank with new Contractor furnished gaskets and fasteners.

B. Remove the existing outer Waukesha Seals and Liners, replace them with new WSF supplied outer Eagle Seals and Liners. After removal of the seals, using a feeler gauge, take stern tube bearing clearances. Exercise care with the feeler gauge so as not to break off leaves in the bearing. Take run out readings on the face of the propeller and counter bore for the seal. Readings to be witnessed by the WSF Inspector and the Vessel Staff Chief Engineer. Submit three (3) copies of a written report of the readings, within twenty-four (24) hours of taking readings, to the WSF Inspector.

C. Take Eagle Seal bearing wear down readings, after installing Seals, in the presence of the WSF Inspector and the Vessel Staff Chief Engineer. Submit three (3) copies of the written reports of the readings, within twenty-four (24) hours of event completion, to the WSF Inspector.

D. Upon completion of taking wear down readings, lock wire the liner and housing fasteners. Fill the outer seal with Hyperlube or STP.

E. Prior to installing the rope guard, and after propeller installation, dial in the outboard liner, run out not to exceed .005". Reading to be witnessed by the WSF Inspector and the Vessel Staff Chief Engineer. Submit three (3) copies of a written report of the readings, within twenty-four (24) hours of taking readings, to the WSF Inspector.

F. Fill the stern tube system with WSF furnished oil.

G. Transport the removed outer Waukesha Seals, and Liners to the WSF Warehouse at 6$^{th}$ Ave. South, Seattle WA. Inform the WSF Inspector twenty-four (24) hours prior to transporting. Provide the WSF Inspector with three (3) copies of the inventory list of transported equipment.

## 29. REPAIR NO. 1 END INBOARD WAUKESHA SEAL AND LINER {MAINTENANCE}

**NOTE:**

The intent of this item is to repair the No.1 End Inboard Waukesha Seal, and replace the liner, in place. Employ the services of Sound Propeller Services, to provide technical assistance.

A. Disassemble the Split Muff Coupling, to allow for the removal of the liner. After disassembly, clean the muff coupling, shaft, in way of the muff coupling, bolts, and nuts. Perform an NDT, Mag. Particle, inspection of the above components for cracks, in the presence of the WSF Inspector and the Vessel Staff Engineer. Submit three (3) copies of a written report of findings, within twenty-four (24) hours of the completion of the event, to the WSF Inspector.

B. Disassemble the seal assembly, remove the liner, clean as necessary. Install the new WSF supplied Ceramic Liner, and reassemble the seal with the new Contractor supplied Viton Seal elements. Contractor will use the technical assistance of the Sound Propeller Rep.

C. Fill the No.1 End Seal with WSF supplied Chervron GST-68 oil. In the presence of the WSF Inspector and the Vessel Staff Engineer, check for leaks, none allowed.

D. Prepare any damaged coating system to an SSPC-SP 3, Power Tool Cleaning, and apply one (1) coat of INTERNATIONAL Intertuf 262 series epoxy, to a minimum of 6 mils (DFT).

## 30. VALVE REMOVAL AND HULL INSERT {MAINTENANCE}

A. Clean and gas free all spaces associated with the work required in this Item, as necessary, to obtain a Marine Chemist Certificate for "SAFE FOR WORKERS", and “SAFE FOR HOT WORK”. Maintain the Certificate for the duration of the work. Provide lighting and ventilation as necessary.

B. Inserts will be marked out and approved by the WSF and USCG Inspectors **prior** to commencing of cropping out hull plate.

C. Remove the following over board discharge valves and insert the hull: one (1) 5” Sewage over board valve located at Frame No.47 Stbd. Side No.1 End. One (1) 1” Bearing Cooling over board valve located at Frame No.53 Port Side No.1 End. One (1) 1” Bearing Cooling over board valve located at Frame No. 53 Stbd. Side No. 2 End.

D. Provide the WSF Inspector with three (3) copies of the ABS mill certification for all new steel prior to moving steel onboard. New plate shall be ASTM A 36, 17.85 pound plate.

E. New steel shall be grit blasted to SSPC-SP10, Near White Blast Cleaning, and coated with an appropriate weld though primer, prior to installation on the Vessel.

F. The WSF and USCG Inspectors must approve all insert fit ups. Test inserts for water tightness prior to painting. Provide the WSF Inspector with three (3) copies of a written report of the results of all inspections and tests.

G. Exterior surface of the hull that is affected by this work Item will be painted IAW the Painting Of The Hull Items.

H. Interior surface of the hull that is affected by this work Item will be prepared to an SSPC-SP3 Power Tool Cleaning. Apply two (2) coats of INTERNATIONAL Intertuf 262 series epoxy, to the areas prepared, to a minimum of 5 mils (DFT) each coat.

I. Provide the WSF Inspector with three (3) copies of a sketch showing the exact locations of the hull inserts by frame numbers and square footage.

## 31. GAUGE VESSEL STEEL

**{STRUCTURAL PRESERVATION - HULL}**

A. Perform an ultrasonic survey of the Vessel's steel plating thickness in the following locations: two (2) girth belts (including vehicle deck), one (1) at Frame No. **30**, No. 1 End; and one (1) at Frame **30**, No. 2 End (**60 shots per belt**); plates in the wind and water areas, Port and Starboard sides, full length (**70 shots per side**); keel plating (**30 shots**); Vehicle deck and superstructure areas (**50 shots**); and in suspect areas as directed by the WSF Inspectors (**50 shots**). The survey shall be performed in the presence of the WSF and USCG Inspectors. Estimate **390** shots will be required.

B. The readings shall be taken from the exterior of the hull when the Vessel is in Drydock. The exact areas to be surveyed will be designated by the WSF and USCG Inspectors. Provide a personnel lift capable of reaching all portions of the hull from the top of the guard down. The readings may be taken through the paint in areas of smooth surface if equipment is capable. In areas disturbed by this work, remove and restore paint as necessary, using the proper coating system.

C. Provide the WSF Inspector with three (3) copies of the written report in a tabular form, identifying the locations of reading taken, original plate thickness, audio gauge reading taken, and percent of wastage. Attach a schematic showing the locations where the shots were taken and the thickness found.

## 32. TOWING EQUIPMENT MODIFICATIONS INSTALLATION {SUBCHAPTER-W}

A. Provide the services of a Marine Chemist to certify that the affected Void is "SAFE FOR WORKERS" and "SAFE FOR HOT WORK". Maintain the certificate during the course of the work required in this Item.

B. Install one (1) new lift-out access hatch, three (3) new stowage hooks, and signage, IAW **Attachment No. 9** WSF Dwg. No. 8000-629-010-01, Rev.-, dated 4/4/03, titled "Fleet Wide Emergency Towing System".

C. Upon completion of the installation, repair any damaged coating system, to match surrounding area.

D. Upon completion of coating system repair, properly install the WSF provided Emergency Towing Equipment in the stowage area.

## 33. AUTOMATIC DRAFT INDICATOR SYSTEM INSTALLATION {NAVIGATION}

A. Install the WSF furnished Automatic Draft Indication System as indicated on **Attachment No. 5**, WSF Dwg. No. 8102-607-095-01, Rev.-, dated 5/29/03, titled "M/V WALLA WALLA, Automatic Draft Indication System, Electrical Installation", **Attachment No. 6**, WSF Dwg. No. 8102-607-002-01, Rev.-, dated 7/31/03, titled "M/V WALLA WALLA, Automatic Draft Indication System, Hull Installation", **Attachment No. 7**, WSF Dwg. No. 8102X-589-090-01, Rev. A, dated 10/14/02, titled "M/V WALLA WALLA, New Ship Service Switchboard Electrical One Line Diagram Mods"; and **Attachment No. 8**, (WEIR-JONES) 8268-ADIS-PROPOSAL-REF-A0, dated 11/04/02, titled "General Equipment And Technical Specs Of The Automatic Draught Indicator System."

B. Equipment vendor, vendor contact information, and spare parts are listed on **Attachment No. 5**. System installation will include four (4) each, ultrasonic transducers and mounting hardware, located IAW **Attachment No. 6**. Two (2) each, wheelhouse display units, one (1) each system central processing unit, one (1) each system printer, (all located IAW **Attachment No. 5**), and all cabling, connection boxes and hardware.

**NOTE:**

**Attachments No. 7 and No. 8** are provided for informational purposes **ONLY**.

C. Within the **first three (3) days of Vessel arrival**, provide the WSF Inspector with three (3) copies of a written report listing the exact lengths for the Transceivers Support Pipes that will be installed through the "guard".

D. After equipment installation is complete, the Contractor will obtain the services of Weir-Jones Engineering Ltd, the equipment vendor, to accomplish system startup/commissioning, and any calibrations necessary.

E. Conduct an operational test to the satisfaction of the Weir-Jones Engineering Ltd. Vendor Representative, the WSF and USCG Inspectors. Provide the WSF Inspector with three (3) written copies of the test results.

F. All new steel will be prepared to an SSPC-SP 10, Near White Blast Cleaning. Existing painted surfaces affected by this work will be prepared to a SSPC-3, Power Tool Cleaning.

G. To all prepared surfaces, above the guard, apply one (1) coat of INTERNATIONAL Intertuf 262, to a minimum of 6 mils (DFT), followed by a topcoat of INTERNATIONAL Intercare 755, to a minimum of 2 mils (DFT) of proper color to match the surrounding area.

## 34. INSPECTION OF NO. 1 AND NO. 2 END COOPER BEARINGS {MAINTENANCE}

**NOTE:**

There are two (2) Cooper Bearings per End. The after Bearing is a conventional pedestal mounted Bearing. The forward Bearing is integral with a watertight bulkhead seal.

A. Disassemble, clean, inspect and reassemble the No. 1 and No. 2 End Line Shaft Cooper bearings (two (2) on each end; total of four (4).

B. Inspection of the bearing components shall be done in the presence of the WSF Inspector and the Vessel Staff Chief Engineer. Submit three copies of a written report of the inspection findings to the WSF Inspector.

C. Following the inspection and a thorough cleaning, repack the bearings to the manufacturer's recommendations with WSF furnished grease. The WSF Inspector and the Vessel Staff Chief Engineer prior to reassembly shall inspect repacked bearings.

D. Reassembly and final tightening shall be to the manufacturer's recommendations.

## 35. HULL STEEL REPAIRS

**{MAINTENANCE}**

A. Clean and gas free all spaces associated with the Work, as necessary, and obtain a Marine Chemist certificate for "SAFE FOR WORKERS", and "SAFE FOR HOT WORK". Maintain the certificate during the course of the Work. Provide fire watches as required.

B. The intent of this section is to accomplish structural repairs to internal structure and shell plating that has wasted due to salt water from the Vessel's Vital Generator saltwater pump. **The repair work will be sequenced in a manner that will maintain structural rigidity and alignment for all components affected by and in way of the work**. **Submit the planned sequence to WSF for approval, prior to commencing work.** Crop out and renew in kind all wasted steel adjacent to the Vital Generator saltwater pump. For bidding purposes, assume 50 square feet of steel will need to be replaced. The contract shall be adjusted up or down to account for the actual amount of steel replaced.

C. Conduct watertight test and inspection to the satisfaction of the WSF and USCG Inspectors, and the Vessel Staff Chief Engineer.

D. Following completion of all repairs and inspections, prepare the new and disturbed areas to an SSPC-SP3, Power Tool Cleaning.

E. Apply coating to the prepared surfaces as required by the location corresponding to the interior or exterior paint system in this specification.

**( END )**